Uniwell
2004-2-4

LX-5000 series 02 type

LX-5600 2-sheet dot matrix printer
LX-5700 2-sheet thermal printer
LX-5750 1-sheet thermal printer

Interfaces & Peripherals Manual

CAUTION!

When the control key position is LOCK, the display is off and keyboard is disabled but the ECR's power is still **ON**. So that before you connect the cable of peripherals, make sure that the AC cord is disconnected otherwise the ECR will be damaged.

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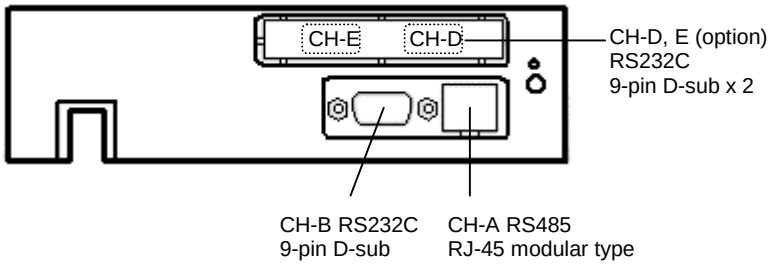
I. INTERFACE INFORMATION

The following interfaces are provided:

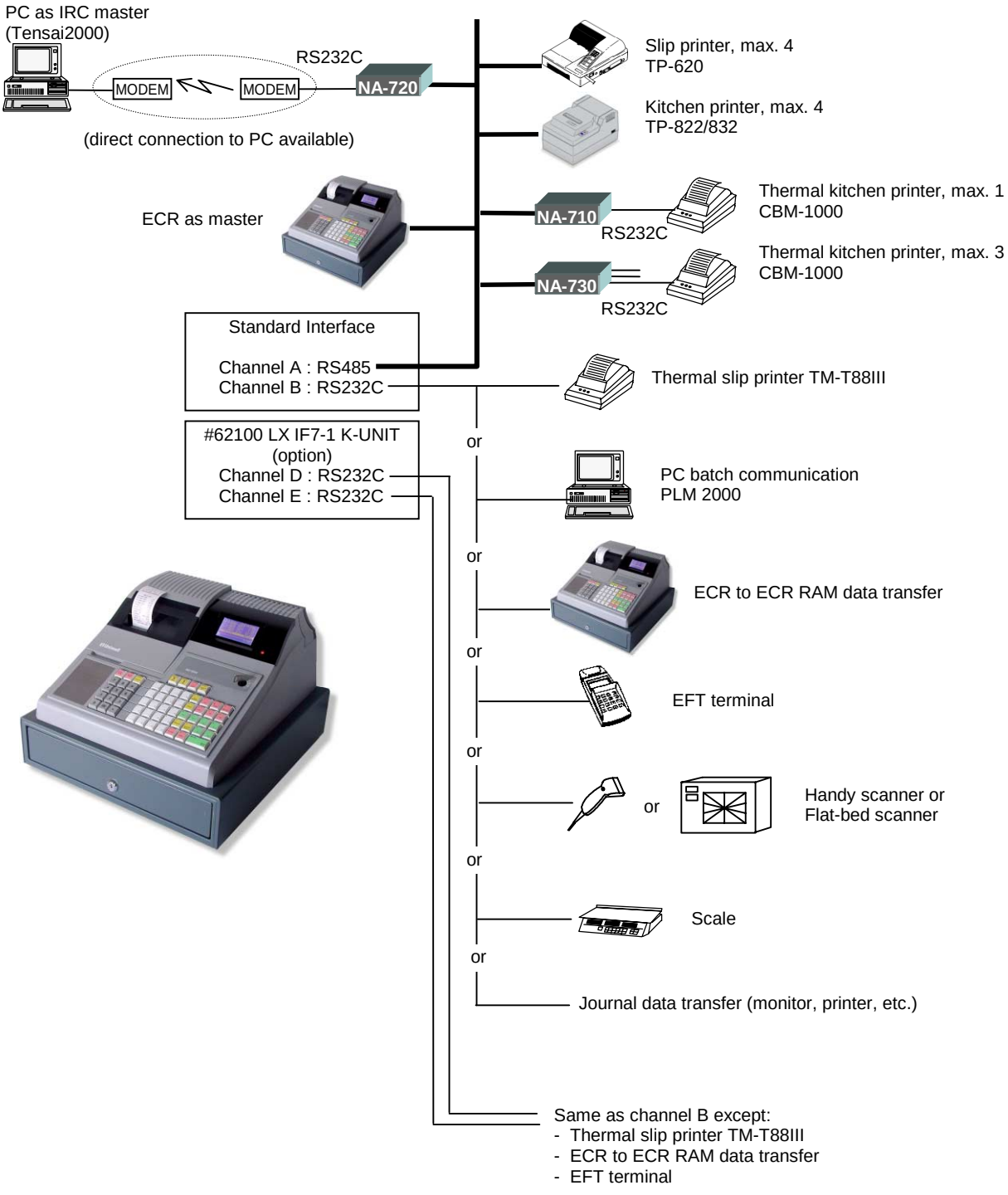
	Channel		Used for
Standard Interface	A	RS485	**IRC** : up to 8 units including an ECR master or PC as IRC master (Tensai2000) via NA-720 **4 kitchen printer** -- one of kitchen printer can be used as a slip printer TP-822 : Citizen DP-416 impact dot matrix printer with auto cutter TP-832 : Citizen LT-1320 thermal printer with auto cutter CBM-1000 : thermal printer with auto cutter (connected via NA-710/730) **4 slip printers** TP-620 : Epson M290 impact dot matrix printer **Network Adapters** NA-710/730 for 1 or 3 thermal kitchen printer(s) NA-720 for PC as IRC master or for Modem to PC
	B	RS232C	One of : - PC batch communication, Programming Loader Module PLM 2000 - Scanner - Scale - Thermal slip printer TM-T88III - ECR to ECR RAM data transfer - Journal data transfer - EFT terminal
(62100) LX IF7-1 K-UNIT (option)	D	RS232C	Same as channel B
	E	RS232C	(except Thermal slip printer TM-T88III, ECR to ECR RAM data transfer and EFT terminal)

Channel C is not used.



System Configuration

Maximum 8 units can be connected via IRC line including the master, max. 4 kitchen printers and max. 4 slip printers. However, an ECR can use one slip printer.



Pin Assignment & Character Structures

CHANNEL A

(RS485, RJ-45 modular type connector)

Baud rate : 19200 bps or 38400 bps [SF-89.a]

Character structure : start bit = 1 bit
(fixed) data bit = 8 bits
stop bit = 2 bits
parity = even

PIN #	SIGNAL	FUNCTION
1	DATA+	Comm. data signal (+)
2	DATA-	Comm. data signal (-)
3	CTL+	Comm. line control (+)
4	N.C.	
5	N.C.	
6	CTL-	Comm. line control (-)
7	N.C.	
8	N.C.	

CHANNEL B

(RS232C, 9-pin D-sub female connector)

Block size : 1024 characters for PC batch communication

Baud rate : 600 ~ 38400 bps [SF-94.f~h]
9600 ~ 38400 bps [SF-89.d,e] for ECR to ECR RAM data transfer

Character structure : start bit = 1 bit
data bit = 7 bits or 8 bits [SF-94.b]
stop bit = 1 bit or 2 bits [SF-94.d]
parity = odd, even or null [SF-94.a,c]

PIN #	I/O	SIGNAL	FUNCTION
1		P.GND	Protection ground
2	OUT	TXD	Transmitted data
3	IN	RXD	Received data
4	OUT	RTS	Request to send
5	IN	CTS	Clear to send
6	OUT	+5V	Power supply for handy scanner (max. 200 mA)
7		GND	Signal ground
8	IN	DCD	Data carrier detect
9	OUT	DTR	Data terminal ready

Optional interface board LX IF7-1 K-UNIT : Channels D and E (channel C is not used)

CHANNEL D

CHANNEL E

Same specification as channel B above.
System function [SF-98] for channel D and [SF-100] for channel E are used for the setting of baud rate and character structure.

II. IRC SYSTEM

The master PC or ECR can transmit programming data to the slave ECRs and collect the sales data from the slave ECRs via channel A.

- PC as Master using PC-IRC communication module Tensai2000
- ECR as Master : Any ECR can be a master ECR.

Preparation

Before using the IRC system, the following presetting must be performed:

a) For new machines being added to the system, perform RAM test SP-9901 to erase all RAM contents. **Do not perform this operation on the machines already used as it will erase all preset data.**

b) Confirm the following three points on each ECR:

1. Each ECR is connected by the IRC line. Refer to VII. Cable Connection (page 22).

2. ECR machine number (PGM-171)
   The last two digits of the machine number used for ECR ID #, must be **01 ~ 08** and different for each ECR.

3. Baud rate of all ECRs [SF-89.a] (PGM-100)

SF-89	1/0	bit	1	0
		a	Baud rate: IRC line (ch-A) is 38400 bps	19200 bps

c) IRC status check operation

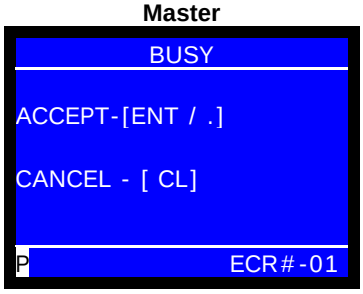
Either a PC as master or ECR as master, perform SP/X-8800 IRC STATUS CHECK on ECR as follows:

< SP >--(8800)--[X2/ENTER]--[• /ENTER] or select IRC PROGRAM and 8800 IRC STATUS CHECK from the list

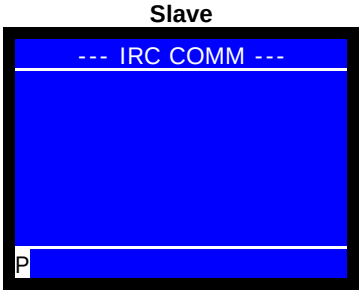
< X >--(8800)--[X2/ENTER]--[• /ENTER] or select IRC STATUS CHECK from the list

During SP/X-8800 IRC STATUS CHECK, the following message is displayed:

Master



Slave



The master ECR will check ECR sequential number up to 8, even when there are fewer ECRs than 8 ECRs on the IRC line.

After IRC status check is completed, all ECR's connected can communicate via IRC line, and the IRC system configuration table is printed as follows:

```
S-8800
 01 #101 OK
 02 #102 OK
 03 #103 OK
#101-000006          19:07P
```

ECR sequential #, machine #, IRC status

If there is a communication error, 'NG' will be printed instead of 'OK'. Retry SP/X-8800 operation.

For the "Program data transfer from master to slaves", "IRC report" and "IRC messages", please refer to programming manual.

III. PERIPHERALS

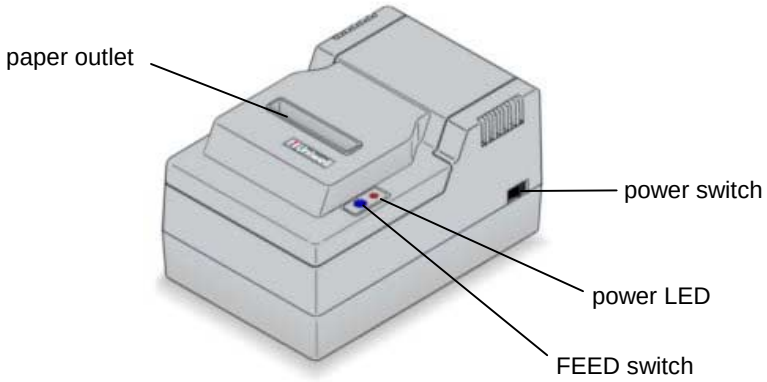
1. TERMINAL PRINTERS

Refer to VII. Cable Connection (page 22).

Following printers are available.

Model	Used for	Connected to
TP-822/832	kitchen printer (dot/thermal)	channel A
CBM-1000	kitchen printer (thermal)	channel A via NA-710/730
TP-620	slip printer	channel A
TM-T88III	slip printer (thermal)	channel B

1) TP-822/832 (Kitchen Printer, connected to ch-A)



ECR SETTINGS

a) Program the following:

[SF-107.e~h]	kitchen printer to be used
[SF-108,109]	back-up kitchen printer
[SF-89.a]	baud rate for IRC line **[1]** 38400 bps, **[0]** 19200 bps The character structure for IRC line has already been fixed on ECR. (1 start bit, 8 data bits, 2 stop bits, even parity)
[PF-4.e~h]	PLU data to be transmitted to which kitchen printer

b) Program the ECR name and the kitchen printer name by the character programming (PGM-152). These names are printed on the kitchen printer every time, like "ECR name --> KP name".

c) When the kitchen printer is used as a bill printer, select the following flags:

[SF-83.h]	**[1]** with slip printer
[SF-86.a,b]	**[0,1]** printer selection for bill : TP-822/832
[SF-87.a,b]	select one of the kitchen printers

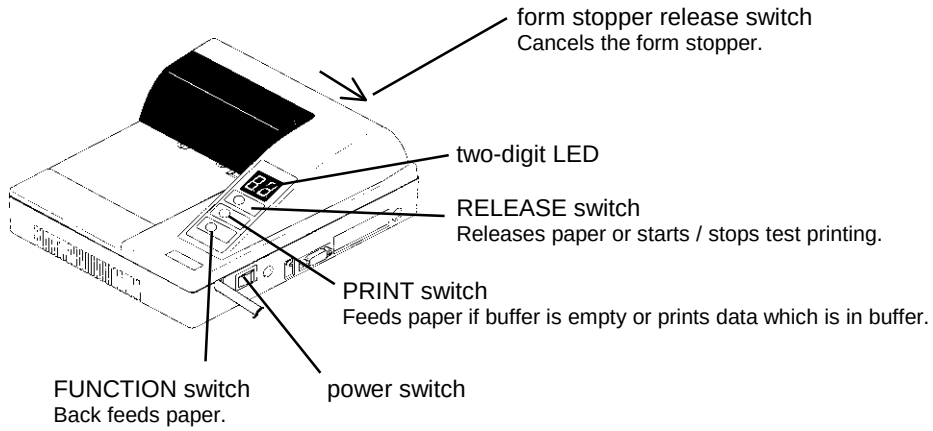
If required, the upper logo and lower logo can be printed on the bill.

[SF-83.d]	upper logo printed on slip
[SF-85.a~d]	number of blank lines between the upper logo and the items
[SF-86.d]	lower logo printed on slip
[SF-86.e~h]	number of blank lines between the lower logo and the last item

TERMINAL PRINTER SETTINGS

Refer to TERMINAL PRINTER PROGRAMMER'S MANUAL.

2) TP-620 (Slip Printer, connected to ch-A)


form stopper release switch
Cancels the form stopper.
two-digit LED
RELEASE switch
Releases paper or starts / stops test printing.
PRINT switch
Feeds paper if buffer is empty or prints data which is in buffer.
FUNCTION switch
Back feeds paper.
power switch

ECR SETTINGS

a) Select following:

[SF-83.h]	**[1]** with slip printer
[SF-89.a]	baud rate for IRC line: **[1]** 38400 bps, **[0]** 19200 bps The character structure for IRC line has already been fixed on ECR. (1 start bit, 8 data bits, 2 stop bits, even parity)
(PGM-179)	Slip printer ID # (should match DIP SW 2 setting of TP-620)

b) See [SF-82 ~ 86] for other selections:
slip validation with logo, bill issue format, time print, slip logo, slip print compulsory condition, automatic slip print, maximum item lines on slip, pre-feed lines on slip, etc.

TP-620 SETTINGS

Refer to the separate document "TERMINAL PRINTER TP-620 USER'S MANUAL".

3) CBM-1000 (Thermal Kitchen Printer, connected to ch-A via NA-710/730)

Before using, ECR original character must be installed by using **CBM-1000-UW ROM**.

ECR SETTINGS --- same settings as TP-822/832 (page 6)

NETWORK ADAPTER SETTINGS

NA-710 : 1 printer can be connected
NA-730 : up to 3 printers can be connected

Unplug the cord and set the dip switches as shown below:
Plug the cord to fix the setting.

DIP SW	NA-710/730
SW1 - 1, 2	[OFF,ON] 19200 bps for RS232C
SW1 - 3	Baud rate for RS485 (set the same baud rate as ECR [SF-89.a]) [ON] 38400 bps [OFF] 19200 bps
SW2 - 1	[OFF] printer ID # 1 ~ 4 (also set SW3, SW4)
SW2 - 2 ~ 4	[OFF,OFF,OFF] printer selection CBM-1000
SW3 - 1	[OFF] auto cut at text end
SW3 - 2	[ON] full cut [OFF] partial cut
SW3 - 3, 4	NA-710 / CH-1 of NA-730 [SW2-1=OFF] → [OFF,OFF] ID# 1 [ON,OFF] ID# 2 [OFF,ON] ID# 3 [ON,ON] ID# 4
SW4 - 1, 2	CH-2 of NA-730 [SW2-1=OFF] → [OFF,OFF] ID# 1 [ON,OFF] ID# 2 [OFF,ON] ID# 3 [ON,ON] ID# 4
SW4 - 3, 4	CH-3 of NA-730 [SW2-1=OFF] → [OFF,OFF] ID# 1 [ON,OFF] ID# 2 [OFF,ON] ID# 3 [ON,ON] ID# 4

CBM-1000 SETTING

Turn off the printer power button and set the dip switches as shown below:
Turn on the power button to fix the setting.

DIP SW	CBM-1000	
DS 1 - 1	ON	with auto cutter
DS 1 - 2 ~ 4	OFF,OFF,OFF,OFF	print mode: high-speed, paper width: 80 mm, print columns: 48
DS 1 - 5	ON	CR mode: LF operation
DS 1 - 6	OFF	input buffer: 4K bytes
DS 1 - 7, 8	ON,OFF	print density : standard
DS 2 - 1 ~ 4	all OFF	ECR original character set
DS 2 - 5 ~ 8	all OFF	JIS, condition for busy to occur: off-line and reception buffer full
DS 3 - 1 ~ 4	OFF,ON,ON,OFF	8-bit data, even parity, DTR/DSR control
DS 4 - 1 ~ 4	ON,ON,OFF,OFF	19200 bps (RS232C)

4) TM-T88III (Thermal Slip Printer, connected to ch-B)

Before using, ECR original character must be installed standard by using **TM-T88III-UW(s) ROM**. Communication setting of ECR for TM-T88III has been fixed to: 19200 bps, even parity, 8-bit data, 2 stop bits.

ECR SETTINGS

a) Select following:

[SF-83.h]	**[1]** with slip printer
[SF-86.a,b]	**[1,0]** printer selection for bill TM-T88III via ch-B
(PGM-179)	Slip printer ID #

b) See [SF-82 ~ 86] for other selections:
slip validation with logo, slip upper/lower logo, slip print compulsory condition, automatic slip print, pre-feed lines on slip, etc.

TM-T88III SETTING

Turn off the printer power button and set the dip switches as shown below:
Turn on the power button to fix the setting.

DSW 1	CONTENTS	
1	ON	ignores data reception errors
2	OFF	data buffer : 4K bytes
3	ON	XON/XOFF control
4	OFF	8-bit data
5	ON	parity enabled
6	ON	even parity
7	OFF	19200 bps
8	OFF	

DSW 2	CONTENTS	
1	OFF	busy condition : off line or data buffer full
2	OFF	printing density level 2 (standard)
3	OFF	(fixed)
4	OFF	(fixed)
5	OFF	(fixed)
6	OFF	(fixed)
7	OFF	#6 pin reset signal not used
8	OFF	#25 pin reset signal not used

2. SCANNER

The handy scanner models HC66R (BHS-6060/R) and BCH5442-STA which are supplied by your destributor can be used immediately after the scanner cable is connected to channel B, D or E. Refer to VII. Cable Connection (page 25).

If they are supplied from third party or a scanner of other manufacturers, some settings are required. Refer to the next page.

HC66R and BCH5442-STA's factory settings: 9600 bps, 7-bit data, even parity, 1 stop bit

ECR SETTINGS

SP-100 System Function Flag

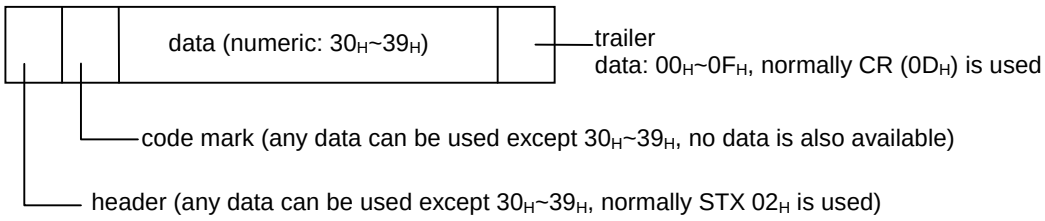
SF-90 SF-92 SF-93	1/0	bit	1	0
		b	**With scanner** ([SF-90] ch-B, [SF-92] ch-D, [SF-93] ch-E)	without
SF-94 ch-B		a	Character structure: Odd parity	**Even parity**
		b	Character structure: 8-bit data	**7-bit data**
		c	Character structure: **Parity permitted**	prohibited
SF-98 ch-D		d	Character structure: 2 stop bits	**1 stop bit**
		e		
		f	Baud Rate [f,g,h]	
SF-100 ch-E		g	[000] 38400 bps; [001] 19200 bps; **[010] 9600 bps;** [011] 4800 bps;	
		h	[100] 2400 bps; [101] 1200 bps; [110] 600 bps	
SF-5		c	Expanded UPC-E code	normal UPC-E code
		h	Source Marking Code : 8, 13-digit PLU codes including check digit are programmed. (ECR treats the last one digit as check digit.)	without check digit (7, 12-digit PLU code are programmed)
			In-Store Marking Code (only for non-embedded code [SF-74,76.e,f=00]): 10-digit article code with check digit is programmed as PLU code. (also see [SF-74,76.d])	without check digit 10-digit article code only (also see [SF-74,76.d])

SCANNER SETTING

Set the followings by a preset bar code menu or a dip switch of the scanner:

- Communication condition (baud rate, data length, stop bit, parity) to match ECR's setting.
- **RTS/CTS handshake (fixed)**
- **Message RTS/CTS (fixed)** --- not character RTS/CTS

If the scanner's data format is as below it can be used.


data (numeric: 30_H~39_H)
trailer
data: 00_H~$0F_H$, normally CR ($0D_H$) is used
code mark (any data can be used except 30_H~39_H, no data is also available)
header (any data can be used except 30_H~39_H, normally STX 02_H is used)

Note: Depending on scanner, the timing which deactivates RTS is fast. In this case, please set scanner to send 2-byte trailer data (post-amble). For example, CR & LF.

Settings for scanner from third party

When you are using BHS-6060 and BCH-5442-STA supplied from third party or a scanner of other manufacturers, some settings are required. Perform the following steps:

1. Connect the scanner to the correct ECR's interface port. RTS signal need to be wired.
   Refer to VII. Cable Connection (page 25).

2. Set the system function flags of ECR. Refer to the previous page.

3. Set the followings on the scanner by a preset bar code menu or a dip switch of the scanner.
   a. **Message (not text) RTS/CTS handshake** must be set. Some scanner has this fixed.
   b. If there is a selection either "scanner ready" or "data ready", choose "**data ready**".
   c. "Baud rate, data length, stop bit, parity" should be matched to the ECR's settings.
   d. Set the data transmission format of the scanner. Refer to the previous page.

4. Check the scanner works with ECR.

5. If the scanner does not work, the timing of the scanner which deactivates RTS may be fast.
   In order to delay the deactivating timing, increase the trailer (post-amble, terminator) to 2 byte data from 1 byte data. Set "**CR, LF**" for example. Then the scanner will work with ECR.

3. SCALE

A scale which has RS232C interface can be connected through either **one of** channel B, D or E.
Refer to VII. Cable Connection (page 24).

Recommended models:

DIGI DS-640, NCI 6720, BARKEL CX-9/CX-10, AVERY A702

Select the scale which matches the scale information described in the following pages.

ECR SETTING

a) Set the following flags:

SP-100 System Function Flag

	1/0	bit	1	0
SF-25		a	Scale interface : W protocol	ICL protocol
		b	Scale type selection [b,c,d]	
		c	[000] standard; [001] Australia; [010] EC; [100] USA; [110] France	
		d	**[SF-90, 92 93.c=1 --- with scale]**	
		e	Weight unit is "kg" ("Kg" for France [b,c,d=110]) up to 9.999 of the manual quantity entry is permitted for standard and EC up to 99.999 is permitted for USA, Australia and France	Weight unit is "lb" (99.99)
		f	Scale print format: USA scale type **[b,c,d=100]** must be set.	
		g	[00/11] Currency symbol is not printed (USA) [01] Currency symbol is printed before PLU unit price (Canada) [10] Currency symbol is printed behind PLU unit price (Quebec)	
		h		
SF-90 **SF-92** **SF-93**		c	With scale ([SF-90] ch-B, [SF-92] ch-D, [SF-93] ch-E)	without
SF-94 **ch-B** **SF-98** **ch-D** **SF-100** **ch-E**		a	Character structure: Odd parity	Even parity
		b	Character structure: 8-bit data	7-bit data
		c	Character structure: Parity permitted	prohibited
		d	Character structure: 2 stop bits	1 stop bit
		e		
		f	Baud Rate [f,g,h]:	
		g	[000] 38400 bps; [001] 19200 bps; [010] 9600 bps; [011] 4800 bps;	
		h	[100] 2400 bps; [101] 1200 bps; [110] 600 bps	

SP-200 PLU Function Flag

PF-6	1/0	bit	1	0
		a	Scalable item	non-scalable item
		b		
		c	Multiple pound price used for USA scale **[a=1] [SF-25.b,c,d=100]**	not used
		d	Tare weight entry compulsory **[a=1]**	not compulsory
		e	Manual tare weight entry permitted **[a=1]**	prohibited
		f		
		g		
		h		

b) Assign **SCALE** key (#251) and **TARE** key (#252) by PGM-101.

SCALE SETTING

Set the communication setting (baud rate, data length, stop bit, parity) to match ECR setting.

1) Scale Information of ICL Protocol [SF-25.a=0]

DATA FORMAT (ICL PROTOCOL)

The format of the data string from the scale is:

STX 02_H	ID	W5	W4	W3	W2	W1	BCC	ETX 03_H

These bytes are defined as follows:

< ID >
ID is an identification byte defining maximum capacity and minimum increments of the scale. Typical capacities and increments are listed below with allocated codes. Further combinations of the codes may be added at the request of scale vendors.

When the weight is under or over the capacity, the weight data of zero (30_H) will be transmitted with bit 4 (X) of the ID byte set to 1.

< W5 ~ W1 >
ASCII code is used for the weight data. In cases where MSD (Most Significant Digit) or LSD (Least Significant Digit) are not required, a 'NUL' character will be transmitted in the unused position.

ID (byte)	Maximum Capacity	Minimum Increment		Weight data recognized by ECR
11X1000	25 lb	1/8 oz	→	XX lb XXX/8 oz
11X1001	15 kg	0.005 kg	→	XX.XXX kg
11X1010	30 lb	0.01 lb	→	XX.XX lb (W1 = NUL)
11X1011	6 kg	0.002 kg	→	X.XXX kg (W5 = NUL)
11X1100	50 lb	0.01 lb	→	XX.XX lb (W4 = NUL)

Weight Data (byte)	
W5 (MSD)	tens of lbs or kgs
W4	units of lbs or kgs
W3	tens of ozs or tenths of kg/lbs
W2	unit of ozs or hundredths of kg/lbs
W1 (LSD)	eighths of ozs or thousandths of kg

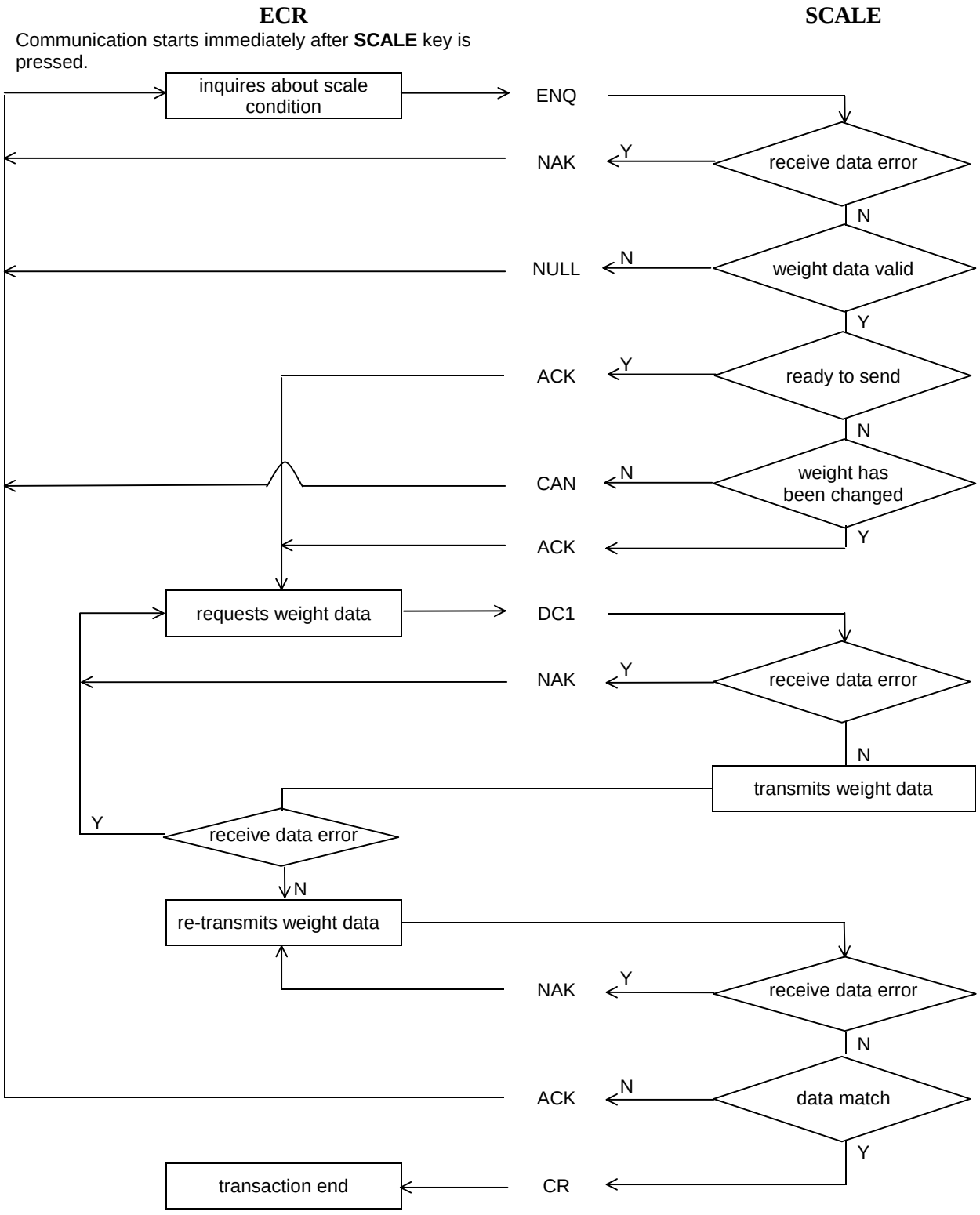
For example, when "15kg" capacity is used and the weight is 2.345 kg, the data will be:

STX 02_H	ID	NUL 00_H	2 32_H	3 33_H	4 34_H	5 35_H	BCC	ETX 03_H

Then, ECR recognizes the data as "2.345" kg.

< BCC >
Block Check Character is calculated as the even column parity of all characters except STX and ETX.

ICL PROTOCOL



2) Scale Information of W Protocol [SF-25.a=1]

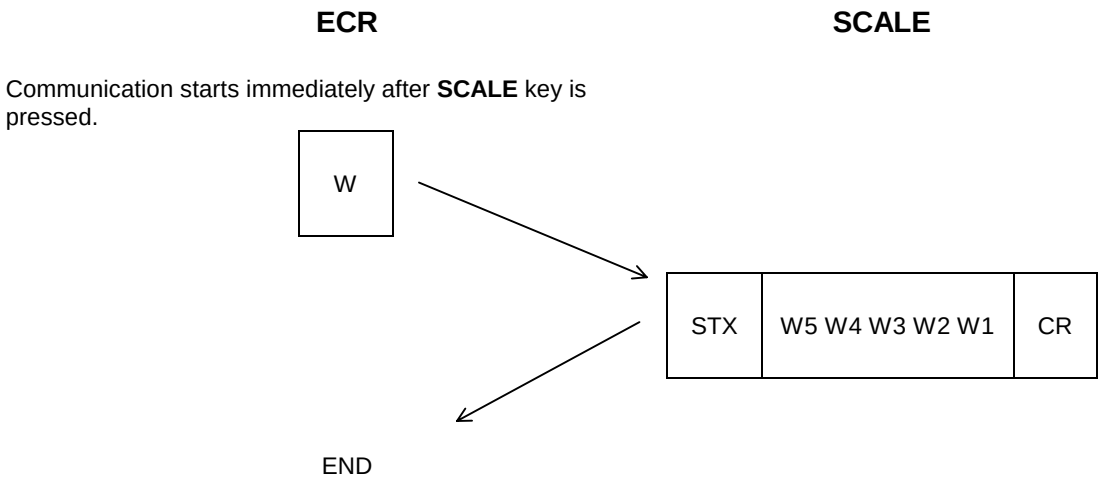
DATA FORMAT (W PROTOCOL)

The format of the data string from the scale is:

STX 02_H	W5	W4	W3	W2	W1	CR $0D_H$

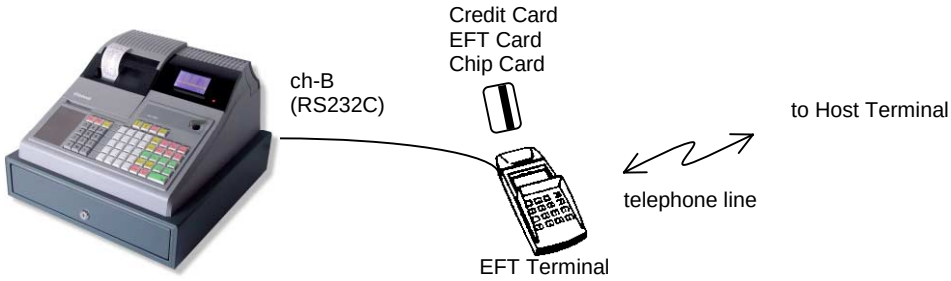
Weight data recognized by ECR	
kg [SF-25.e=1]	XX.XXX kg
lb [SF-25.e=0]	XX.XX lb (W5 = NUL)

W PROTOCOL



4. EFT TERMINALS

One of EFT terminals "G&D, Celectronic, Krone and C-ZAM" can be connected to channel B.
C-ZAM EFT terminal only for Chip Card has been corresponded.
Refer to VII. Cable Connection (page 27).



Notice ! About Power-On Procedure

It is recommended to turn on the power switch of the EFT terminal first, then turn on the ECR. Log-In from the ECR will be done smoothly.

ECR SETTINGS

a) Check the EFT terminal's password and perform the EFT Terminal Password program SP-191.

< SP >--{(191)--[X2/ENTER] or select from the list}--(password: always 6 digits)--[X2/ENTER]

b) Set the following media and system function flags.

SP-110 Media Function Flag

MF-3	**0**	e	Usage of media [e,f,g,h]
	1/0	f	[0000] local currency; [0010] local cheque; **[0001] local EFT;**
	0	g	[0100] Euro currency; [0110] Euro cheque; **[0101] Euro EFT;**
	1	h	[1000] Foreign currency (exchanged directly); [1001] Foreign currency (exchanged via Euro)

SP-100 System Function Flag

SF-66		f	EFT terminal selection [f,g,h]
		g	[001] G & D, Celectronic; [010] Krone; [011] C-ZAM; [others] EFT terminal not used
		h	Set SF-94 (channel B communication setting) to:
			[SF-94=0101 0010] (8 bits, non parity, 2 stops, 9600 bps) for G & D, Celectronic
			[SF-94=0100 0010] (8 bits, non parity, 1 stop, 9600 bps) for Krone, C-ZAM terminal

EFT TERMINAL SETTINGS

Refer to the manual of the EFT terminals.

IV. PC COMMUNICATION

The following functions can be done with a PC through either **one of** channel B, D or E.
Refer to VII. Cable Connection (page 24).

1. BATCH COMMUNICATION

Set terminal address (PGM-172) to communicate with ECR. Refer to the programming manual for the sequence. For details about PC batch communication, refer to PROTOCOL MANUAL UCP-101 and a separate appendix.

REMOTE MEMORY CHANGE

By remote memory change, the PC can modify the memory contents of the ECR. This function consists of the following three types:

a) Memory Change
Alters the ECR's memory contents, by designating the memory address.

b) Memory Management
Alters the contents of the PLU, group and clerk memories.

c) Date/Time Change
Sets the date and time from the PC.

REMOTE MEMORY DUMP

By remote memory dump, the PC can read the memory contents of the ECR.

a) X/Z Report Dump
The X/Z report dump is similar to the X/Z report of the ECR. Using this function, the PC can collect or reset an individual ECR's data.

b) Complete Memory Dump
Collects the ECR's complete memory data from the PC. This is used mainly for making a back-up file of the ECR memory on the PC.

2. PROGRAM LOADER (PLM 2000)

Using the software PLM 2000, the ECR's data can be uploaded/edited on the PC and restored to the ECR. Please follow the steps on the PLM 2000 to setup.

3. ESF DATA TRANSFER (Electronic Store & Forward)

All registrations performed in the **R position** only are recorded in ESF memory on the optional RAM board. Select "ESF function available" [SF-78.a=1] to use ESF memory.

Attention! When the RAM board to be used for ESF is first installed, the Z-79 report must be taken to clear in the Z1/P position on ECR.

PC ESF REMOTE MEMORY DUMP (ESF data transmitted to the PC)

Using PC batch communication (RS232C)

A PC can take all the ESF data and ESF status in ECR by using a command (X79/Z79). When the Z79 is taken by PC, all the ESF data and status will be cleared. X79 does not clear the data.

Using PC-IRC function (RS485)

A PC as the IRC master can take all the ESF data and ESF status in one ECR by using a command (X79/Z79). The consolidation function is not available. When Z79 is taken by PC, all the ESF data and status will be cleared.

ECR ESF STATUS CHECK REPORT (ESF data not transmitted to the PC)

One of two reports can be printed by the system function flag [SF-78.c].

1. only the ESF status (# of used records, remaining records and total # of records)
2. all the ESF data printing with status

When Z79 report is issued, all the ESF data and status will be cleared for both reports.

CATEGORY CODE AND DATA FORMAT

CATEGORY CODE	CONTENTS	DATA FORMAT
6001	No Sale	no sale amount (fixed as zero)

PLU

6020	Non-Taxable	PLU code / unit price / quantity / lot quantity / amount / link supplementary message
6021	Taxable 1	
6022	Taxable 2	
6023	Taxable 3	
6024	Taxable 4	
6025	Taxable 1 & 2	
6026	Taxable 1 & 3	
6027	Taxable 1 & 4	
6028	Taxable 2 & 3	
6029	Taxable 2 & 4	
602A	Taxable 3 & 4	
602B	Taxable 1, 2 & 3	
602C	Taxable 1, 2 & 4	
602D	Taxable 1, 3 & 4	
602E	Taxable 2, 3 & 4	
602F	Taxable 1, 2, 3 & 4	

MEDIA

6030 6031 6032 6033 6034 6036	Direct Closing Media Tendering Amount Entered Media P/O Media R/A Media Tip Media Change Media	media number (*) / amount
6037	Cheque-Cashing/Currency Exchange	media number (*) / tendering amount / cashing rate / amount
6038	Media & Tip Total	tip media number (*) / amount

TOTAL

6060	Subtotal	amount
6061	Due Amount	amount [SF-54.e=0]
		media number (*) / local amount / Euro amount [SF-54.e=1]
6062 6063	Previous Balance + Previous Balance -	amount
6064	New Balance	amount [SF-54.e=0] or [SF-54.e=1, SF-64.f=1]
		local amount / Euro amount [SF-54.e=1, SF-64.f=0]
6065 6069 606A 606B	Current Charge Net Subtotal Tray Subtotal Transaction Void	amount
606C	Short Amount	media number (*) / local amount / Euro amount [SF-54.e=1]
607D 607E 6091 6092	P/O Total R/A Total Amount Discount (-) Amount Plus (+)	amount

%

60A0 60A1	% on Subtotal % on Item	% key number / amount / rate
60A8 60A9	Adjustment 1 Adjustment 2	subtotal amount / adjustment rate / amount

TAX

60B1	Taxable Subtotal	tax number / amount
60B2	Euro Taxable Subtotal	tax number / amount [SF-54.e=1]
60C0	Tax Total	amount
60C1	Tax Amount	tax number / amount
60C2	Tax Exemption	tax number / amount
60C3	Euro Tax Total	amount [SF-54.e=1]
60C4	Euro Tax Amount	tax number / amount [SF-54.e=1]

OTHERS

60D1	Number of People	number of people
60D2	Sales Quantity	number of quantity
60D8	Track Number	track number / charge amount
60D9	Table Number	table number
60E2	Message	message (max. 20 characters)
60E3	Cooking Message	cooking message (max. 20 characters)
60E8	Media & Tip Total Message	key/symbol # 76 programmed characters
60F1	Last Line Data	machine # / clerk # / consecutive # / date / time
60F4	Time-in	clerk code / job code / time-in date / time
60F5	Time-out	clerk code / job code / time-out date / time
60FF	ESF Status Data	number of used records / total records
E11 E12 E13	Z1 Report Count Z2 Report Count X Report Count	count
E21 E31	Consecutive # Machine #	number
E51	Date/Time	date / time

Note (*): Media Number 10~25 corresponds to A~P.

V. ECR TO ECR RAM DATA TRANSFER

ECR to ECR RAM data transfer is done by using channel B.

This transfer will send the programming data and sales data. If only the programming data is required, reset the sales data by issuing all Z-reports, then follow the sequence below.

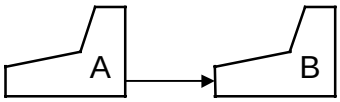
PREPARATION

1) Set the baud rate by the system function flags for both ECRs. Other communication setting have been fixed.

SF-89	1/0	bit	1	0
		d	Baud rate for ECR to ECR RAM data transfer (ch-B) [d,e]:	
		e	[00] 38400 bps; [01] 19200 bps; [10/11] 9600 bps	

2) Connect the ECR to another ECR using channel B.
Refer to VII. Cable Connection (page 26).

RAM DATA TRANSFER



From ECR A to ECR B

1) **On ECR B**, perform the sequence below. Check that "-- Pc-in --" is displayed.

< SP >--{(1002)--[X2/ENTER] or select 1002 COMM LOAD from the list}--[X2/ENTER]

2) **On ECR A**, perform the sequence below. "-- Pc-out --" is displayed during the communication.

< SP >--{(1001)--[X2/ENTER] or select 1001 COMM DUMP from the list}--[X2/ENTER]

VI. JOURNAL DATA TRANSFER

The journal data is transmitted to a peripheral device through either one of channel B, D or E. Refer to VII. Cable Connection (page 26).

PREPARATION

Set the following flags on ECR and the peripheral device to match ECR's communication condition below:

SF-90 SF-92 SF-93	1/0	bit	1	0
		d	With journal data transfer ([SF-90] ch-B, [SF-92] ch-D, [SF-93] ch-E)	without
SF-94 ch-B		a	Character structure: Odd parity	Even parity
		b	Character structure: 8-bit data	7-bit data
		c	Character structure: Parity permitted	prohibited
SF-98 ch-D		d	Character structure: 2 stop bits	1 stop bit
		e		
SF-100 ch-E		f	Baud Rate [f,g,h]	
		g	[000] 38400 bps; [001] 19200 bps; [010] 9600 bps; [011] 4800 bps;	
		h	[100] 2400 bps; [101] 1200 bps; [110] 600 bps	
SF-105		a	Journal data transfer compulsory **[SF-90/92/93.d=1]**	not compulsory

DATA FORMAT

journal data (24 digits)	C R	L F

TRANSMITTED CHARACTER

CODE	0	1	2	3	4	5	6	7	8	9
0			Space	0	@	P	Space	p	TD	FS
1			T1	1	A	Q	a	q	PO	F1
2			T2	2	B	R	b	r	RA	F2
3			#	3	C	S	c	s	R2	F3
4			$	4	D	T	d	t	PR	F4
5			%	5	E	U	e	u	TB	F5
6			&	6	F	V	f	v	DP	F6
7			'	7	G	W	g	w	RC	F7
8			£	8	H	X	h	x	OI	ä
9			Ñ	9	I	Y	i	y	□	§
A	LF		*	:	J	Z	j	z	◊	β
B			⊢	ϕ	K	Ä	k	T3	DL	⌐
C			Å	<	L	Ö	l	T4	=	⌙
D	CR		-	Σ	M	Ü	m	FC	⏎	_
E			.	>	N	Æ	n	↑	T5	(
F			/	?	O	⊖	o	DW	T6	)
									T7	

Double-width characters (7F) are converted to one character code and one space code.

VII. CABLE CONNECTION

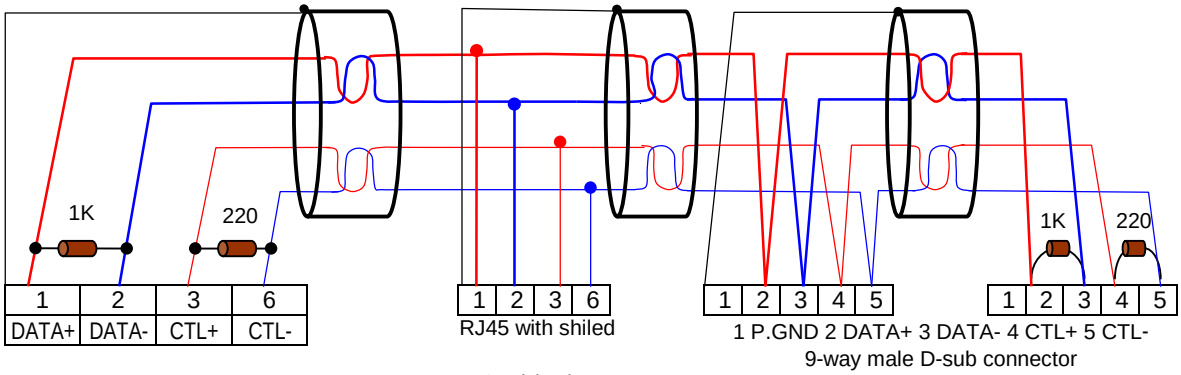
1. CHANNEL A --- IRC LINE

RJ-45 Modular Type Cable Information
Please use the straight LAN cable (shielded type) which is generally sold.

RS422/485 Shielded Twisted Pair	
Conductor:	AGW24
Characteristic impedance:	< 100 ohms
Capacitance per meter:	40 - 100 pF
Attenuation at 1Mhz / 100m:	2 - 6 db
Cable length:	max. 1200 m
Connectors and Connector Shells:	Ideally use: EMI / RFI Shielding RJ45 type

About Ground
Each ECR must be grounded at the same level and the termination resistors must be fitted on the first and last devices on the line. Please refer to the document "IRC & TERMINAL PRINTER CABLING INSTRUCTION (RS-485)" for how to connect cables.

Joint Box
JOINT BOX 485 (REF.# 62092) makes the cable connection simple, quick, and easy between ECRs and Terminal Printers on an IRC line (RS-485). Refer to the option instruction manual for details and connection samples.



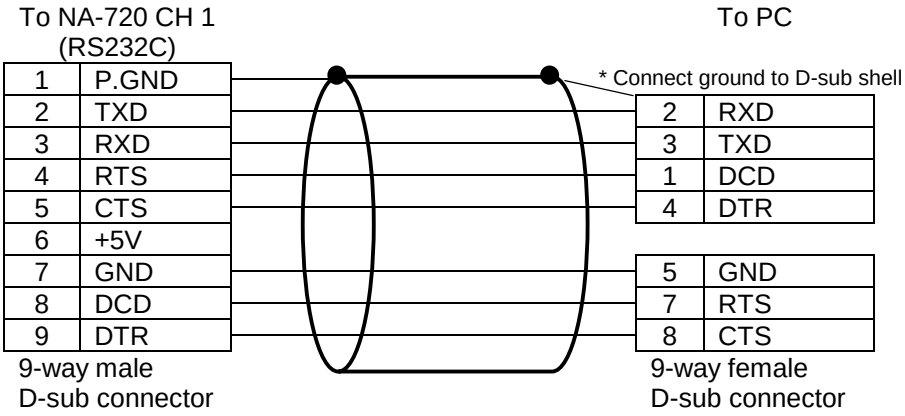
ECR channel A
RJ45 modular type connector with shield

1K ohm termination resistor (1Kohm)
220 ohms termination resistor (220ohms)

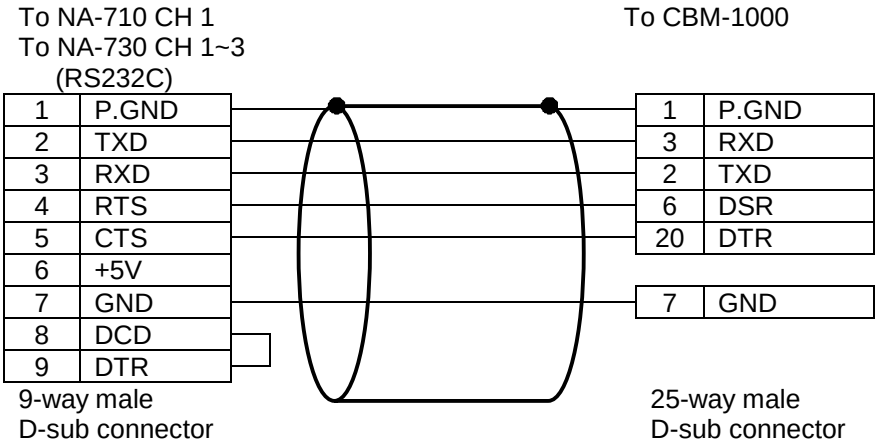
To ECR (ch-A)
To kitchen printer
TP-822/832 (RJ45)

To slip printer TP-620
To Network Adapter NA-720 (MASTER)
To Network Adapter NA-710/730 for kitchen printer CBM-1000

Cable connection between NA-720 (CH1) and PC

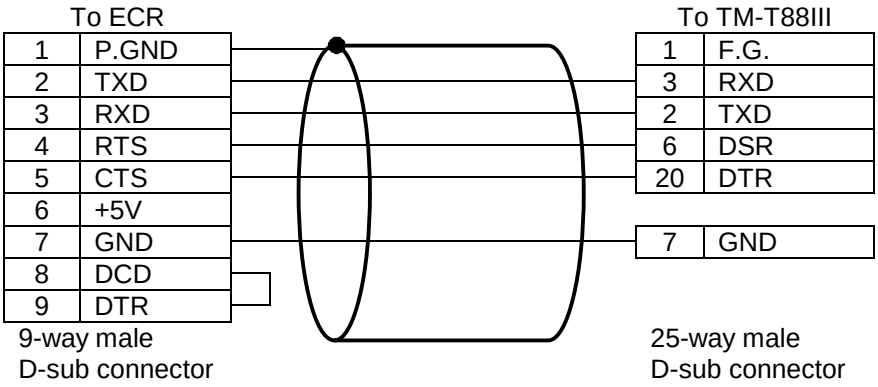


Cable connection between NA-710/730 and thermal printer(s) CBM-1000

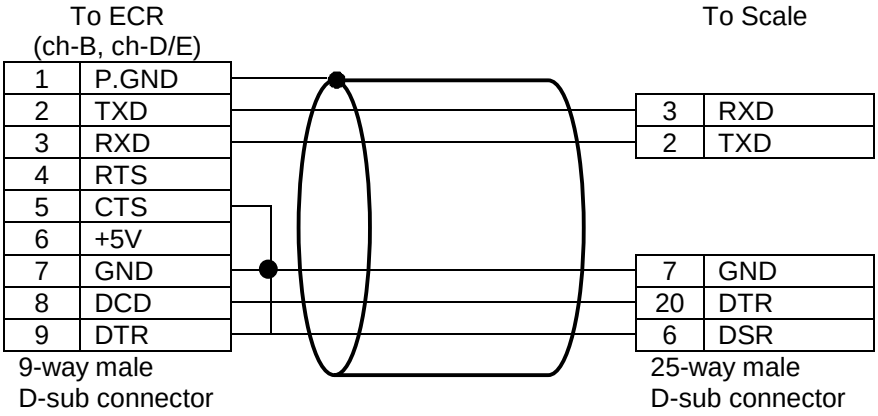


2. CHANNELS B, D & E

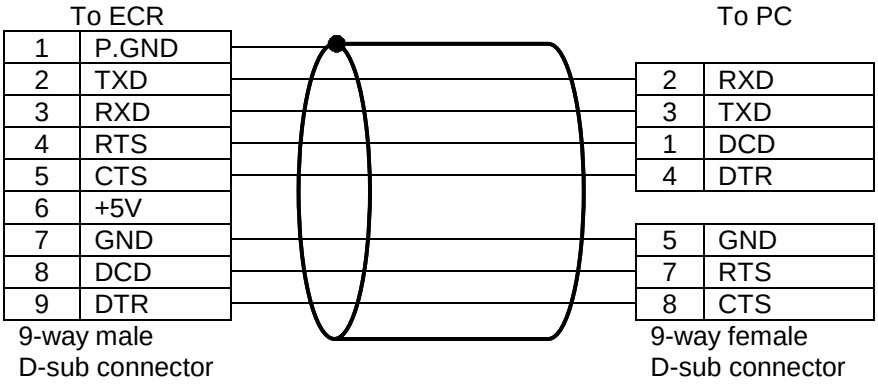
1) ECR (ch-B) to Thermal Slip Printer TM-T88III



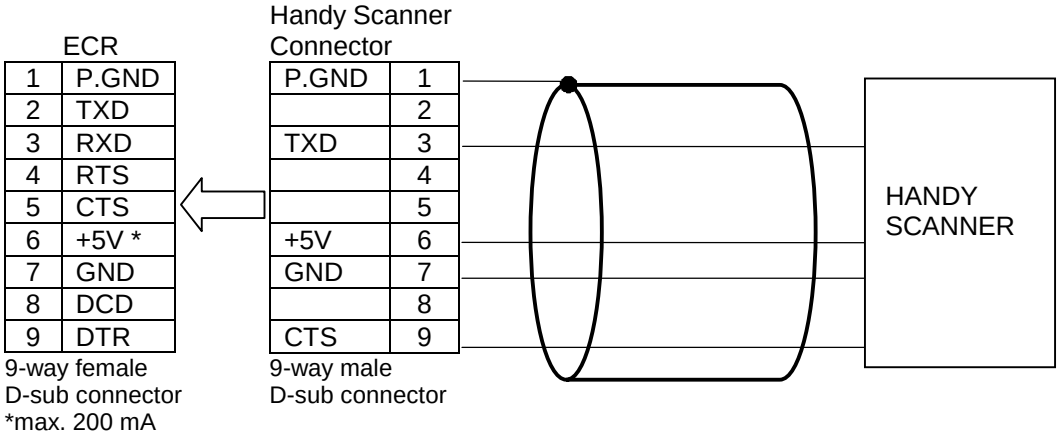
2) ECR (ch-B, ch-D/E) to Scale



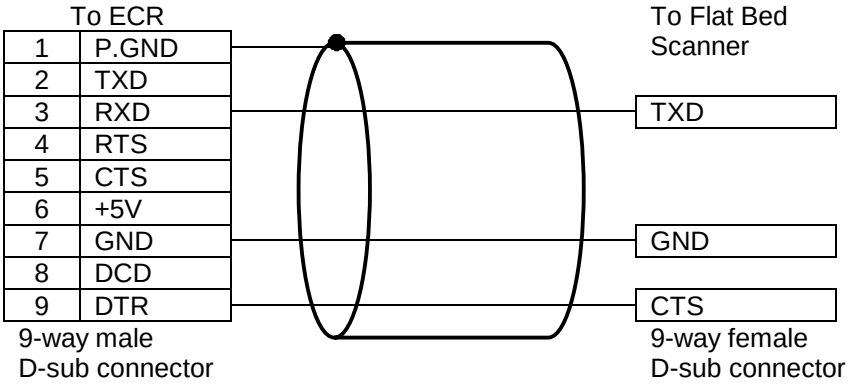
3) ECR (ch-B, ch-D/E) to PC



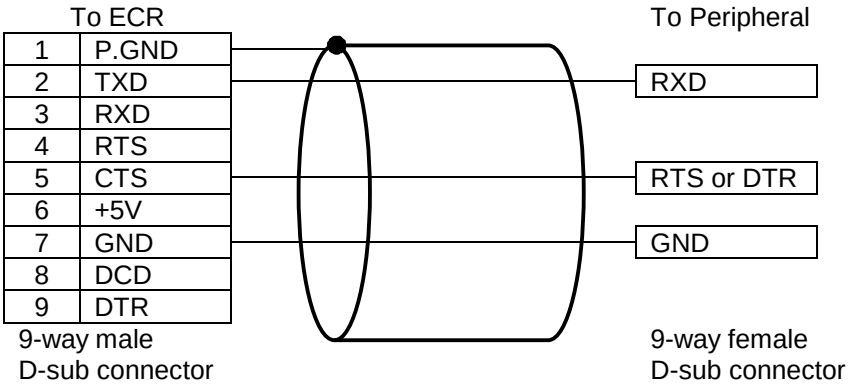
4) ECR (ch-B, ch-D/E) to Handy Scanner



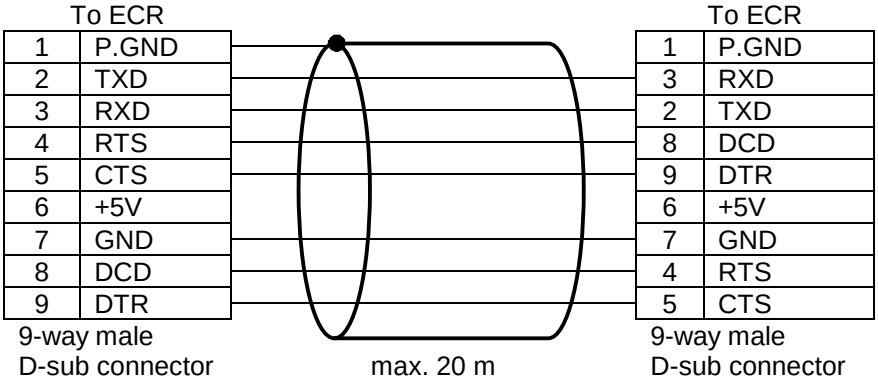
5) ECR (ch-B, ch-D/E) to Flat Bed Scanner



6) ECR (ch-B, ch-D/E) to Peripheral for Journal Data Transfer



7) ECR (ch-B) to ECR (ch-B) for RAM Data Transfer



8) ECR (ch-B) to EFT Terminal